

REMARKS

Claims 1-35 are currently pending in the application; with claims 1 and 18 being independent. Claims 1-35 were pending prior to the Office Action. In this Reply, claims 1-35 have been amended.

The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein. Applicants respectfully request favorable consideration thereof in light of the amendments and comments contained herein, and earnestly seek timely allowance of the pending claims.

Claim Rejections – 35 USC §112

The Examiner rejected claims 1-17 under 35 U.S.C. § 112, first paragraph, based on a disclosure which is allegedly not enabling. Specifically, the Examiner alleged that: claim 1 does not include a transitional phrase; claim 1 does not recite steps; and, with respect to claims 2-17, that it is unclear what limitations of claim 1 are further defined by the limitations recited in the dependent claims. The Examiner also rejected claims 1-17 under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential step(s).

These rejections are respectfully traversed. Applicants have amended claim 1 to explicitly recite steps after the transitional phrase “comprising”, as indicated below:

A method for automatic dose control of one or more chemicals in a liquid treatment system, which comprises:

inputting properties of a liquid into a predefined adaptation model;

modifying a change of control in the control surface of a linguistic equation (LE) controller adaptively, using the predefined adaptation model and the properties of the liquid; and

controlling the dosing of one or more chemicals to the liquid by one or more controllers.

Applicants have also amended claims 2-17 to improve the form of the claims.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 112 rejections of claims 1-17.

The Examiner rejected claims 19-21, 24 and 35 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. In particular, the Examiner rejects claims 19-21 because of insufficient antecedent basis with respect to the recited “linguistic equation”, claim 24 because of insufficient antecedent basis with respect to the recited “controller setup”, and claim 35 because of the term “intelligent”.

This rejection is respectfully traversed. Applicants have amended claims 19-21 to recite “a linguistic equation associated with said linguistic equation (LE) controller”, claim 24 to recite “a controller setup in said device arrangement” and claim 35 to recite “an intelligent analyzer which is an implemented software module or device representing measurement handling routines”, based on page 12 lines 34-37 in the specification.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 112 rejection of claims 19-21, 24 and 35.

Claim Rejections – 35 USC §102

The Examiner rejected claims 18-35 under 35 U.S.C. § 102(b) as being anticipated by “Intelligent Methods in Dosing Control of Water Treatment” by Juuso et al., Proceedings of Workshop on Applications in Chemical and Biochemical Industry, 1999, pp.1-8 (herein “Juuso I”). The Examiner rejected claims 18-35 under 35 U.S.C. § 102(b) as being anticipated by “Intelligent Control of a Rotary Kiln Fired with producer Gas generated from Biomass” by Jarvensivu M., Juuso E., Ahava O., Engineering Applications of Artificial Intelligence, 2001, pp.629-653 (herein “Juuso II”).

These rejections are respectfully traversed.

Applicants have amended claim 18 to recite:

A device arrangement for automatic dose control of chemicals in liquid treatment system, said device arrangement comprising:

one or more predefined adaptation models which inputs properties of a liquid; and

a linguistic equation (LE) controller, wherein a change of control in the control surface of the linguistic equation (LE) controller is modified adaptively using one of said predefined adaptation models and the properties of the liquid, to control the dosing of chemicals to the liquid by one or more controllers.

Juuso I Reference

Juuso I merely discloses a water treatment process using linguistic equations which are suitable for both steady-state and dynamic modeling (Conclusion Section). Juuso I makes only a brief reference to adaptive dosing control in the Conclusion Section and in the description of the linguistic equation controller, where it states that “LE controller can be made adaptive and it can be tuned with neural networks.” This vague reference to adaptive control does not teach the specific details recited in claim 18. For example, Juuso I does not teach a predefined adaptation model which inputs properties of a liquid. Juuso I also does not teach that a change of control in the control surface of the linguistic equation (LE) controller is modified adaptively using one of said predefined adaptation models and the properties of the liquid, to control the dosing of chemicals to the liquid by one or more controllers, as claim 18 recites.

Per MPEP § 2131, “a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). For anticipation, “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). MPEP § 2131.02. Juuso I does not, expressly or inherently, disclose each and every element as set forth in claim 18. Thus, Juuso I does not anticipate claim 18.

Applicants further point out that Examiner’s rejection based on Juuso I (on page 4 of the Office Action) does not discuss the elements of the independent claim and mentions only some of the dependent claims, and therefore is based on mere conclusory statements. Applicants also point out that when evaluating claims for anticipation under 35 U.S.C. § 102, all the limitations of the claims must be considered and given patentable weight.

Juuso II Reference

Juuso II discloses a control structure for a rotary kiln which combines feedforward control models (FF) and high-level feedback (FB) controllers. The FF control part uses linguistic equations. The FB part of the system is based on a multilevel adaptive LE controller structure (Section 7).

Juuso II does not disclose a predefined adaptation model which inputs properties of a liquid, and a linguistic equation (LE) controller, wherein a change of control in the control surface of the linguistic equation (LE) controller is modified adaptively using one of said predefined adaptation models and the properties of the liquid, to control the dosing of chemicals to the liquid by one or more controllers, as claim 18 recites.

Juuso II discussion of adaptive scaling does not teach the claimed features of claim 18. At page 636, col. 2, lines 13-18, Juuso II mentions that “the operation of the LE controller is modified by means of adaptive scaling, which is used to adjust the control surface in accordance with changing operating conditions.” The discussion in Juuso II does not teach a predefined adaptation model which inputs properties of a liquid, since Juuso II is concerned with a rotary kiln for a forest pulp mill, with quality of burned lime, and with sawdust feed (see Sections 3 and 5.7 and Figs. 11-12), and properties of a liquid are not used in an adaptation model of Juuso II. Juuso II also does not teach that a change of control in the control surface of the linguistic equation (LE) controller is modified adaptively using one of said predefined adaptation models and the properties of the liquid, to control the dosing of chemicals to the liquid by one or more controllers. Juuso II does not disclose a LE controller for which a change of control is modified adaptively using a predefined adaptation model and the properties of a liquid, to control the dosing of chemicals to the liquid, since Juuso II does not teach any adaptation model for control of chemical dosing in a liquid, or adaptive modification using a predefined adaptation model and properties of a liquid. The controllers of Juuso II are configured and set for control of quality of burned lime/ sawdust feed etc., and not for control of dosing of chemicals to a liquid.

Since Juuso II does not, expressly or inherently, disclose each and every element as set forth in claim 18, Juuso II does not anticipate claim 18. MPEP § 2131.02.

Applicants again point out that Examiner’s rejection based on Juuso II mentions only features of some of the dependent claims and is based on conclusory statements. Applicants also point out that when evaluating claims for anticipation under 35 U.S.C. § 102, all the limitations of the claims must be considered and given patentable weight.

For all of the above reasons, taken alone or in combination, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejections of claim 18. Claims 19-35 depend from claim 18 and are allowable at least by virtue of their dependency.

CONCLUSION

In view of the above amendments and remarks, this application appears to be in condition for allowance and the Examiner is, therefore, requested to reexamine the application and pass the claims to issue.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Corina E. Tanasa, Registration No. 64,042, at telephone number (703) 208-4003, located in the Washington, DC area, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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